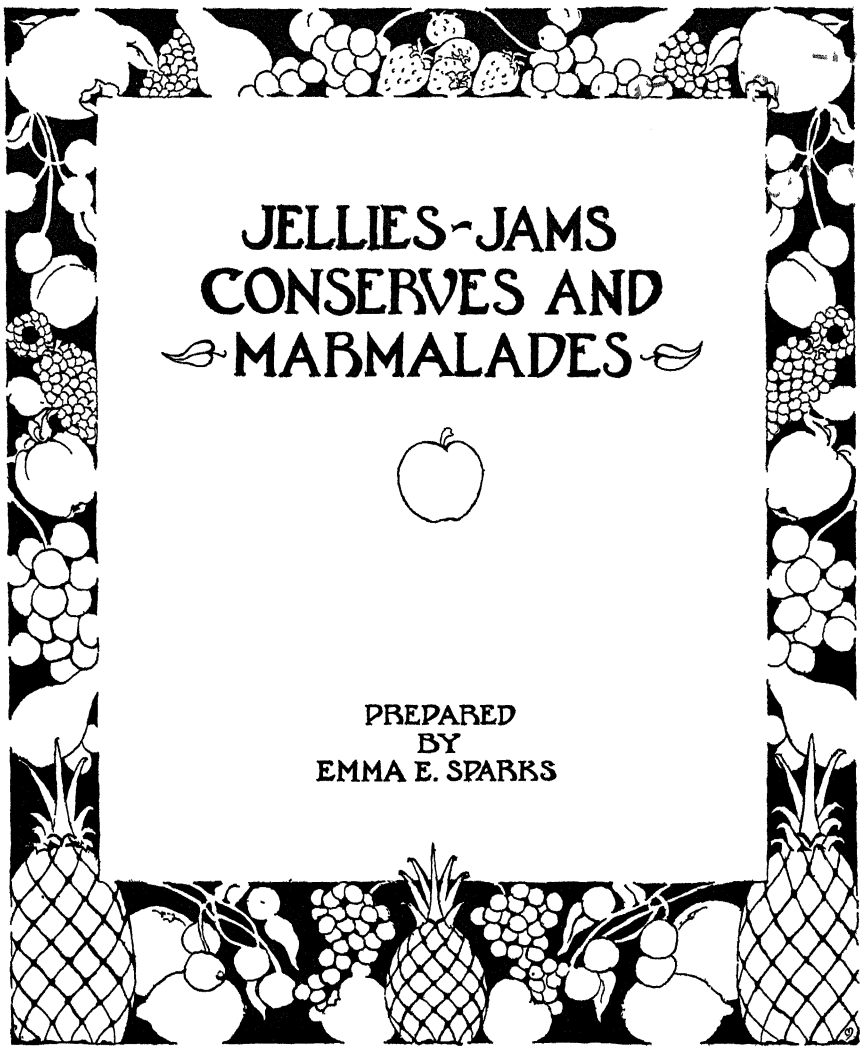

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Jellies, Jams, Conserves, and Marmalades

Jellies, jams, conserves, and marmalades afford an opportunity to the housewife to make her meals more attractive, palatable, and varied. They often afford also a use for undersize, imperfect or underripe fruits which are not ideal for canning.

JELLY

What is it? "Ideal fruit jelly," says N. E. Goldthwaite of the University of Illinois, "is the beautifully colored, transparent, palatable product obtained by so treating fruit juice that the resulting mass will quiver, not flow, when removed from the mold; a product with the texture so tender that it cuts easily with a spoon, and yet so firm that the angles thus produced retain their shape; a clear product that is neither sirupy, gummy, sticky nor tough; neither is it brittle, and yet it will break, and does this with a distinct, beautiful cleavage, which leaves sparkling, characteristic faces. This is that delicious, appetizing substance, a good fruit jelly."

SELECTING THE FRUIT

For the purpose of jelly making, fruit falls into two classes: (1) those from which it may be made easily, as tart apples, crab apples, currants, grapes, blueberries, some plums, quince, and raspberries; (2) those from which jelly can only be made when they are combined with other fruits, as cherries, peaches, and strawberries.

A good jelly-making fruit must contain acid of the right kind and pectin. Good examples of such fruits are apples and currants. Some fruits have one and not the other. Peaches for example have pectin but lack acid, while elderberries lack both. Jelly may be made of fruits of the latter class by the addition of the acid or the pectin directly or by blending them with other fruits, rich in jelly-making properties. Apple juice is the one usually used with fruits having poor jelly-making qualities, as it affects color and flavor least.

The fruit must be fresh, slightly underripe, or barely ripe for jelly of the best flavor. Underripe fruit lacks flavor but is rich in pectin. Overripe, soft fruit has unnatural flavors which affect the flavor and quality of the jelly.

EXTRACTING THE JUICE

The juice is extracted by slowly boiling the fruit in water in a covered kettle, and straining it through a cheese cloth bag. All

the jelly-making material, flavor, color, acid, and pectin are not removed from the fruit in one cooking. Two or three extractions may be made.

After the first cooking, the fruit is drained without squeezing the jelly bag. This extraction is the richest in jelly-making properties but there is too much good yet in the pulp for it to be wasted. The pulp may be extracted a second time, and even a third time, or it may be used for fruit butter.

The second and third extractions are made by again covering the pulp with water, bringing it to a boil and straining. It is worth while to make a third extraction only of those fruits from which jelly is readily made. This third extraction is less rich in flavor and color. It is good, therefore, if concentrated, for combining with fruits having poor jelly-making properties.

To make jelly, combine the two or three extractions after the second and third have been concentrated about one-half.

The length of time necessary for cooking a fruit varies with the fruit. Ten minutes is adequate for soft fruits, as berries, currants, and grapes. Apples and plums require 20 minutes and quinces, 30 minutes or, until soft.

Use 1 pint of water per quart or, ¾ pint of water per pound of soft fruit, or 1 pint for each pound of hard fruit. Each pound of fruit should yield about 1 quart of jelly juice.

Pressing the bag in these extractions will give a cloudy jelly if the juice is not further clarified. This may be done by straining through a cotton flannel bag, or, as recommended by Professor W. W. Chenoweth of the Massachusetts Agricultural College, straining the juice through four layers of cheese cloth and through a single thickness after the jelly is cooked but yet boiling hot

PECTIN IN JELLY MAKING

The factor which determines the success with which jelly may be made from any fruit juice is the correct proportions of the ingredients. That is, the amount of sugar that is to be used with a given measure of juice. The quantity of sugar is determined by the acid and pectin in the juice. A very small amount of acid is adequate for a successful jelly; but, when the acid is present, there is a direct relationship between the amount of pectin and the amount and quality of the jelly to be made from a given amount of juice.

The use of more sugar in jelly making than can be utilized by the pectin in a given juice is responsible for more jelly-making failures than all other causes combined. If jelly is to be made from

juice with a small amount of pectin, it may be added from some other source. Use less sugar with a low amount of pectin. Experience is necessary to estimate probabilities of getting jelly from such a juice. It therefore behooves the jelly maker to know the juice with which she is working. This can be done by making one of the following pectin tests.

1. *The alcohol test.*—Mix 1 tablespoon of hot juice and 1 tablespoon of alcohol. (Wood alcohol or denatured alcohol may be used for this test but they are poison and should not be tasted.) If a sufficient amount of pectin is present, a solid mass of jelly, firm enough to be lifted on a spoon, will form. Less pectin will be indicated by flecks of jelly only. This test should be watched carefully as the alcohol has a tendency to dissolve the jelly formed.

2. *Epsom Salts Test.*—Mix ½ teaspoon of Epsom salts with 1 tablespoon of cooked fruit juice. Stir until the salts dissolve and let stand for 20 minutes. If the fruit juice contains enough pectin to make a good jelly, it will form a gelatinous mass.

APPLE PECTIN

Pectin for use in jelly making may be prepared from apples. Wash sour, hard, ripe apples; remove blossom ends, and cut into small pieces. Use the skin and cores. To each pound of fruit add 1 lemon and 4 pints of cold water. Boil the mixture rapidly for 45 minutes. Place in a cotton flannel jelly bag and allow the juice to drain,—do not squeeze the bag. Use immediately with fruits poor in pectin or pour into sterilized jars; process for 5 minutes and seal for future use.

ORANGE PECTIN

Cut or grate the yellow rind from the orange. Then peel or grate ½ pound of white rind; if peeled, run through a food chopper. Add 4 tablespoons lemon juice and 1 quart of cold water. Let stand for from 1 to 2 hours. Add 1 quart of water and slowly bring the mixture to the boiling point. Boil in a covered kettle for 10 minutes. Let stand overnight and boil again for 15 minutes. Cool and strain. The pectin extract may be used at once or poured into sterile jars and processed in a water bath for 30 minutes.

COMMERCIAL PECTIN

Some people prefer commercially prepared pectin. Where the farm affords apples or where apples are cheap, they furnish an easily available and cheap source of the jelly-making substance.

SUGAR

Sugar in the right proportions is vital in jelly making. There is, however, no difference in the efficiency of cane and beet sugar. If equally well refined, they are identical in composition and form.

Sugar is used in jelly making for the following reasons:

1. To combine with acids and pectin, causing the juice to jell more rapidly.
2. To improve the consistency of the jelly.
3. To improve flavor.

Preheating the sugar in jelly making seems to be of no particular advantage. The juices showing the highest pectin content will utilize the most sugar, provided acid in sufficient quantity and of the right kind is present. Too much sugar makes a gummy jelly which will not mold. Too little sugar makes a tough jelly.

The sugar may be proportioned either to pounds of fruit, or quarts of juice when 1 quart of juice is obtained from 1 pound of fruit. The amount of sugar will vary with the acidity of the fruit and the desired taste. Some of the more acid fruits require as much as 1¼ pounds of sugar per pound of fruit, while less acid fruits will require but ½ to ¾ of a pound of sugar per pound of fruit or quart of jelly juice.

UTENSILS FOR MAKING JELLY

In making jelly, cheese cloth or a cheese cloth bag is essential for straining the juice from the fruit and a heavy cotton flannel bag, or several layers of cheese cloth are required for finally clarifying the juice.

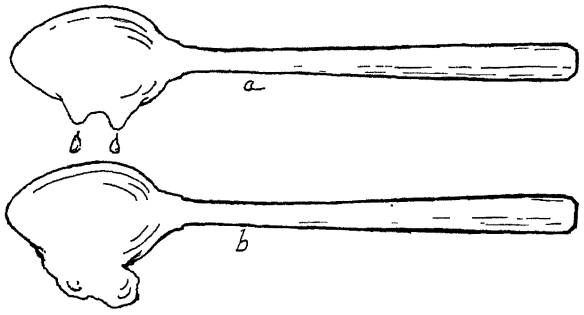
The kettle for cooking the jelly should be wide enough for free evaporation and deep enough to hold the amount of juice being cooked and leave plenty of room above so that the rapidly boiling juice will not boil over.

COOKING THE JELLY

When the juice has been extracted and clarified, the pectin test made, and the sugar measured, the process of cooking the jelly is ready to begin. The juice should first be concentrated until there is about one pint for each pound of fruit originally cooked; or, until the juice is concentrated about one-half, when one pound of fruit has been made to yield one quart of juice. See table II page 7. It is best not to cook too large a quantity at one time for example not more than 1½ to 2 quarts of juice.

Add the sugar to the concentrated juice when it is rapidly boiling. For acid fruit juice, the amount of sugar should vary from 1 to 1¼ pounds of sugar to 1 pound of fruit, or to 1 pint of concentrated jelly juice. For the less acid fruits, use ½ to ¾ pound of sugar per pound of fruit or pint of concentrated jelly juice. Rapid boiling gives a better flavored and brighter jelly.

Watch the jelly for the finish. The experienced jelly maker notes the change in the appearance of the boiling juice as the jelly stage is reached. The juice will first be sirupy when poured from the spoon. It will then drop as two or three drops and finally it will tear from the spoon as a sheet.



a.—Jelly juice not sufficiently cooked drops from a spoon.
b.—Completely cooked jelly breaks from spoon in sheet.

The thermometer may be used to test jelly. When pectin and acid are present in adequate quantities, the jelly will form at from 219¼° to 222°F.

CARING FOR THE FINISHED JELLY

If the jelly juice has been strained through a cotton flannel bag, it may be poured directly into the sterilized jelly glasses. If, however, it has been strained through the four thicknesses of cheese cloth, boiling hot jelly should be strained through a single thickness of cheese cloth into a hot pitcher and then poured into the jelly glasses. This completes the clarification and removes all scum. The glasses should be clean and dry, and filled to within ¼ inch of the top. When well set run a knife around the edge of the top of the jelly to a depth of not more than ⅛ inch. Pour a thin layer of hot paraffin over the jelly. The covers should then be placed on the glasses and they should be labeled and stored in a cool dry place.

JELLY-MAKING TABLES

In making jellies from various fruits, it is necessary to control the amount of juice produced by a given amount of fruit, the acidity, and the pectin content in relation to the amount of sugar used. The following table is the one used by Professor Chenoweth.

Jelly may be made with any fruit as a basis, if the proper amounts of pectin and acid are provided. For instance, ripe blackberry jelly is often difficult to make. But, the addition of a juice

rich in pectin, such as apple, to give a good pectin test, will produce an excellent jelly with a blackberry flavor. Jelly from the juice of strawberries or cherries is more difficult to make than jelly from ripe blackberries, and the jelly juice should be boiled somewhat beyond the point where the mixture gives the jelly test.

I. EXTRACTING THE JUICE

Fruit	First Extraction		Second Extraction		
	Water per lb. of fruit	Length of cooking	Water per lb. of fruit	Length of cooking	Standing period after cooking
Apple	1 pt.	20 min.	1 pt.	20 min.	15 min.
Blackberry	1 cup	15 min.	1 pt.	15 min.	15 min.
Blueberry	1 cup	15 min.	1 pt.	15 min.	15 min.
Crabapple	1 pt.	20 min.	1 pt.	20 min.	15 min.
Cranberry	1½ pts.	10 min.	1½ pts.	15 min.	15 min.
Currant	1 cup	10 min.	1 pt.	15 min.	15 min.
Grape	1 cup	10 min.	1 pt.	15 min.	15 min.
Plum	1 pt.	15 min.	1 pt.	15 min.	15 min.
Quince	1 qt.	30 min.	1 qt.	30 min.	15 min.
Raspberry	1 cup	10 min.	1 pt.	15 min.	15 min.
Strawberry	1 cup	15 min.	1 pt.	15 min.	15 min.

II. CONVERTING THE JUICE INTO JELLY

Fruit	Concentration of juice per lb. of fruit before adding sugar	Amount of sugar per pint of concentrated juice	Amount of cooking after adding sugar	Approximate yield per lb. of fruit
Apple	to 1 pt.	8 to 12 oz.	to jelly test	12 to 16 oz.
Blackberry	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
Blueberry	to 1 pt.	8 to 12 oz.	to jelly test	12 to 16 oz.
Crabapple	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
Cranberry	to 1 pt.	16 to 20 oz.	to jelly test	22 to 28 oz.
Currant	to 1½ pts.	16 to 20 oz.	to jelly test	22 to 28 oz.
Grape	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
†Plum	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
Quince	to 1½ pts.	16 to 20 oz.	to jelly test	24 to 28 oz.
Raspberry	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
†Strawberry	to 1 pt.	12 to 16 oz.	to jelly test	16 to 22 oz.
Combination	½ vol. extracted juice	12 to 16 oz.	to jelly test	16 to 22 oz.

† To the juice of strawberries and some plums, a juice such as apple should be added to make satisfactory jelly. For proportions see "Combination."

JELLY-MAKING TROUBLES

1. Jelly not set
   - Juice lacked acid or pectin
   - Too much sugar for pectin and acid in juice
   - Insufficiently cooked (a thin sirup)
   - Overcooked (a heavy sticky wax or sirup)
   - Long slow cooking (pectin is injured by long cooking)

2. Jelly not clear
   - The jelly juice not properly clarified or strained
   - Jelly cooked too long
   - Finished jelly not properly handled
     - Poured from too great a height above glasses
     - Allowed to cool too much before pouring
   - Unripe fruit (starch present)
   - Juice concentrated too much (pectin precipitated)
3. Sugar crystals
   - Juice lacked acid
   - Sugar insufficiently cooked
   - Too much sugar for acid and pectin
4. Weeping jelly glasses

   Sometimes a quantity of liquid separates from the jelly and oozes up over the top of the jelly glass. This is known as weeping jelly. Tender jellies are more likely to be so affected than tough ones. This may continue until the whole jelly mass reverts to a sirup. Weeping jelly may be caused by:
   - The glasses being too full
   - The jelly cooked insufficiently
   - The paraffin over the top being too thick
5. Fermented jelly
   - Jelly insufficiently cooked
   - Fermentation of the juice from weeping jelly. The flavor of this fermented juice will permeate the whole glass of jelly.

FRUITS, BUTTERS, JAMS, CONSERVES, AND MARMALADES

Fruit butters are made by cooking fruit pulp with sugar until a mixture of a consistency suitable for spreading is formed. In general, the fruit is cooked until tender, rubbed through a colander or seive, to remove all skins, seeds, and cores, and cooked with sugar until the desired consistency is secured. Less sugar is used than for jellies, jams, and marmalades. From one-third to one-half as much sugar as pulp is usually used, depending upon the degree of sweetness desired.

Butters require frequent stirring to prevent burning. Quick cooking gives a clearer product. Sometimes a combination of the pulp of more than one fruit gives a better flavor than where one fruit alone is used.

APPLE BUTTER WITH CIDER

½ bushel of ripe cooking apples
2 gallons sweet cider
2-3 pounds of sugar
spices

Wash apples. To the ½ bushel of apples add 1 gallon of sweet cider; boil until the fruit is soft, then press through a sieve. Reduce the second gallon of cider to 1 quart and add it to the apple pulp. Boil the mixture until thick and add sugar. Continue cooking and just before the desired consistency for finished apple butter is reached, add spices if desired (6 teaspoons ground cinnamon and 2 teaspoons ground cloves). When the butter has become a heavy dark brown paste, pack in hot jars and seal.

GRAPE BUTTER

Grape butter is most economically made as a by-product of grape juice. The addition of apples gives a better consistency and flavor. The amount of sugar depends upon the degree of sweetness desired. The following proportions give good results.

2 cups grape pulp
2 cups apple pulp
2 cups sugar

Prepare the fruit pulp by cooking the fruit and rubbing it through a sieve or colander. Combine the ingredients and boil until thick. Seal in clean hot jars.

PEACH BUTTER

Peel and stone the peaches. Cook in as small an amount of water as possible until they are reduced to a pulp. Rub through a colander. Add one-half as much sugar as pulp and cook the mixture until it is thick and clear. Constant stirring toward the last will be necessary to prevent burning. Pack into clean hot jars and seal at once.

PEAR BUTTER

Treat as for peach butter except that the pears need not be peeled and cored, but cooked and run through a sieve. The flavor is improved if combined with lemon juice or other tart fruit.

JAMS

Jams are made of whole or crushed small fruits, such as strawberries, blackberries, or raspberries. Imperfect fruit may better be used for these than for canning. The fruit should be heated slowly using the juice of the fruit instead of water for cooking. Constant stirring may be necessary to prevent burning. When the mixture begins to thicken, one-third to one-half as much sugar as fruit by weight should be added and the mixture cooked until it is

thick enough to spread easily. It should be cooked until a heaping spoonful will remain heaping full when dipped out of the boiling mass.

STRAWBERRY JAM (SUN-COOKED)

Wash and stem the berries, lifting them from the water rather than draining the water from the fruit. Place the fruit in an agate pan, crush a part or all of the berries, and add sugar at the rate of ¾ pound for each quart of fruit. Stir thoroughly. Cover the pan and set aside for 24 hours. Set the pan over the fire and heat to boiling, stirring to prevent burning. After the boiling is uniform throughout the pan, boil for 1 minute. Remove from the fire. As the jam cools, stir until the froth and foam are dissolved. Set the pan in a sunny window for from 2 to 4 days. Stir once or twice each day. When of desired consistency, fill into clean tested jars and process in water bath for 2 minutes at boiling temperature.

STRAWBERRY JAM (COOKED)

Prepare the berries as for canning. If a jam of smooth, even consistency is desired, crush most of the fruit. Place it in a sauce pan and heat slowly until the juice flows freely. Then boil rapidly, stirring to prevent burning, until the bulk of the liquid has evaporated; i.e., until the hot pulp will mount up on the stirring spoon. Add sugar equal to one-half the weight of the fruit, or approximately 1½ cups per quart of fruit. Stir to dissolve sugar and boil rapidly until finished. A finished jam will mount up on the stirring spoon or will flake from the edge as a jelly test when the hot jam is poured from the spoon. Allow to cool for a few minutes, stirring frequently to dissolve the foam which forms during boiling. Fill into clean tested jars, partially seal and process in water bath just long enough to exhaust all the air. This will require about 1 or 2 minutes at boiling temperature. If a rough or uneven texture jam is desired, crush only a part of the fruit and add one-third to one-half of the sugar before beginning to cook. The remainder is as given above.

BAR-LE-DUC

1 cup currants

1 cup sugar

2 tablespoons water

Boil sugar and water until it hairs. Add currants and boil about 15 minutes or until the mixture jellies.

CONSERVES

A conserve is a jam made of a combination of fruits. It may also contain nuts and raisins. Some care needs to be used in making combinations. A few suggestive recipes follow.

STRAWBERRY AND RHUBARB CONSERVE

1 quart strawberries
6 cups sugar
1 quart rhubarb

Cut tender rhubarb into ½-inch pieces. Do not peel. Mix strawberries, rhubarb, and sugar and cook slowly until clear. Pour into clean sterile glasses and seal.

GRAPE CONSERVE

3 pounds seeded grapes
6 cups sugar
1 pound English walnuts (broken into small pieces) if desired

Mix ingredients and cook together as for jam. If desired, the juice of one orange and the peel of one-half orange may be added. Nuts are better added at the time of serving. Seal in sterile jars.

PLUM CONSERVE

1 gallon plums
6 cups sugar
3 oranges
1 lemon
Nuts, if desired. (Blanched almonds are good.)

Scrub oranges and lemon. Cut in thin slices, cover with cold water and let stand several hours. Cook until soft. Cut the plums into quarters and add. Cook until thick. Add the sugar. Cook until it gives the jelly test. Add nuts to heat through, or better, add the nuts, chopped, at the time of serving.

PEACH AND PINEAPPLE CONSERVE

2 cups diced peaches
2½ cups sugar
1 cup cooked pineapple
1 orange
1 lemon, juice and grated rind

Combine ingredients and cook until mixture is clear, stirring to prevent burning. Pour into hot sterile jars and seal.

PEAR AND APPLE CONSERVE

1 pint diced pears
1 pint diced tart apples
1 lemon, juice and grated rind
1 cup seedless raisins
½ cup English walnuts
3½ cups sugar

Mix ingredients and cook until the mixture is thick and clear. Pack into hot sterile jars and seal. It is better to add the nuts at the time of serving rather than when the conserve is cooked.

GOOSEBERRY CONSERVE

3 quarts gooseberries
1 pound raisins, chopped fine
1 pound ground pineapple
8 cups sugar
2 cups English walnuts

Wash gooseberries and boil them until they burst. Add sugar, ground pineapple, and chopped raisins. Boil the mixture until it is thick. It is better to add the nuts fresh at the time of serving.

MARMALADES

A marmalade, to be perfect, should be a jelly-like mass with the whole fruit or pieces suspended in it. Fruits, to make good marmalades, must contain pectin and acid. To make the best

quality of marmalade the fruit must be cooked rapidly. The following recipes are typical of the marmalades. If the marmalade is partly cooked before putting in the jars, the pieces of fruit will remain suspended in the sirup.

ORANGE MARMALADE

2 oranges
1 lemon

Grind, or slice, very thin, the oranges and lemon. Cover with 2¾ quarts of water and let stand for 24 hours. Take ¾ cup sugar for each cup of materials. Boil hard for 20 minutes or until it begins to give the jelly test. A grapefruit may be used instead of one of the oranges.

RHUBARB AND PINEAPPLE MARMALADE

3 pounds red rhubarb
2 pounds sugar
2 lemons, juice and grated rind
1 cup pineapple, cut in pieces

Boil the mixture until it is thick and clear. Turn into jars and seal them when they are cold.

GRAPE MARMALADE

Wash the grapes, remove from the stems. Press the pulp from the skins. Cook the pulp and put it through a sieve to remove the seeds. Add the skins to the pulp. Measure this mixture and add two-thirds as much sugar as pulp. Cook the mixture until the skins are tender, about 20 minutes, and seal it at once in clean hot jars.

SCORE CARD FOR JELLY

Flavor	50
Appearance	20
Color 10	
Clearness ... 10	
Consistency	20
Container	10
Label and neatness.... 5	
Size and shape..... 5	
	100

SCORE CARD FOR CONSERVES, JAMS, AND BUTTERS

Flavor	50
Smoothness	10
Consistency	20
Color	10
Container	10
Label 5	
Neatness 5	
	100

SCORE CARD FOR MARMALADES

Flavor	50
Evenness and distribution of material	10
Consistency	10
Clearness	10
Color	10
Container	10
Neatness 5	
Label 5	
	100